

Interactive comment on “Analysis of recent lower stratospheric ozone trends in chemistry climate models” by Simone Dietmüller et al.

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We thank referee #2 for the positive and constructive comments on our manuscript. Due to the suggestions of referee #1 we include some additional analysis to this paper. With that we gained additional insight to the possible processes determining the ozone trends in the LS. Due to the new results we also reorganized the structure of the manuscript in the last sections (see new section 3.4 and 3.5). Moreover, note that we do not consider interannual correlations any more, as we felt that not too much was learned here.

In the revised manuscript we consider all questions and comments.

Minor issues:

C1

1) There are a lot of minor editorial issues, especially missing hyphens (e.g. ‘free running’) and miss-ing commas. I assume that the editorial office will sort these out if the authors don’t find them.

-> We re-read the manuscript carefully and found some of these minor issues. If there are re-maining ones, they will surely be corrected during the typesetting process.

2) Page 1. Line 10-11. It is not clear what the ‘systematic change’ relates to. The sentence mentions ‘different analysis periods’, but for the change to be systematic the period would have to be chang-ing in a particular direction?

-> Rephrased.

3) Page 2. Line 4. Need to say ‘1987 Montreal Protocol and later Adjustments/Amendments’. Also, different ODSs started to decline at different times. Some (e.g. HCFCs) might still be growing. You mean the total halogen loading from ODSs.

-> Done.

4) Page 2. Line 8. There were still ODSs in atmosphere in 1980. Need to say ‘pre-1980’ or similar.

-> Done.

5) Page 3. Line 12. Put references in chronological order.

-> Done.

6) Page 4. Line 14. Ball et al (2018) also included some SD runs which showed very poor agreement with the observed trends. That could be mentioned here.

-> Done.

7) Page 5. Footnote. ‘fourth’.

-> Done.

C2

8) Page 8. Line 22. Please state which model was used by Stone et al. Is that one of the CCMI mod-els?

-> Done.

9) Page 9. Caption (and elsewhere). Post 1998 is not the 'post ODS' period. ODSs are still present and different ones have different trends. Total chlorine and bromine are declining, which is not the same thing. You should find another description.

-> Thank you for this helpful comment, we now do not use the expression post-ODS any more, which was indeed a min-nomer.

10) Page 12. Line 3. 'depend'.

-> Done.

11) Page 12. Line 11. 'low not significant'. This reads strangely. Maybe it is a lack of a comma, but could also be better to say 'non-significant'.

-> Done.

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2020-947>, 2020.